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ABSTRACT

Industry's view of the role of academic research services, industry's return on the investment, and forms of purchase of research services are discussed and some related ethical and economic issues are presented. Four catagories of academic research services are identified: (1) available, independent, focused expertise; (2) peer review; (3) independent communications between competing industries or industry and government; and (4) credible opinions. For each of these academic services a viable, acceptable return on investment is listed. The forms of purchase of research services are discussed, including individual consultation; focused grants-in-aid; the university project/independent consultant; and the incorporated academician covering the supplemental activity of some academicians who individually contract to provide research services. (SPG)

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INDUSTRIAL VIEWS OF FACULTY RESEARCH SERVICES

by

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THIRD ANNUAL ACADEMIC PLANNING CONFERENCE
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INDUSTRIAL VIEWS OF FACULTY RESEARCH SERVICES

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Thank you for your kind invitation to join this conference and present our views on this serious topic. We recognize that we industrial researchers are, in making this presentation, something like the land animals viewing the life of the fish in the sea from which we evolved. We can try to be empathetic. We can try to understand how the fish live. We can try to compare their environment to our own. But we cannot really live it nor really remember how it was. The analogy may go even further. We land animals can view the sea as our basic source of food and try to use it to our best advantage, taking the fish from it as our source of nourishment and growth. We industrial technical people can view academia as our breeding ground and we can take out future nourishment from it - but we will concentrate today on how we use it otherwise. This is the theme of presentation - how we use academically-based research services.

In keeping with the theme of the conference, we will try to point out some economic and ethical issues but -- trailing back to the analogy -- we will avoid judgments because we feel we are in your environment, not ours. Thus, we feel incapable of making judgments having no understanding of the qualitative and quantitative factors such as overt and covert contractual agreements which affect the judgments.

Our discussion covers four separate subjects:

- The Role of Academic Research Services - An Industry View
- Industry's Return on the Investment
- Forms of Purchase of Research Services
- Ethical and Economic Issues

The Role of Academic Research Services

In looking at the purchased services, we are deliberately avoiding the role of industry in supporting academia -- we are not looking at the donations or the broad support given by organizations or individuals to nurture the academic environment. Our theme is "purchased services".

We believe that industry purchases academia-based services for four purposes. Before discussing these -- in keeping with our approach in this presentation -- let us define "academia-based" services. These are, for the purpose of this discussion, all services bought from, through or including university people. As you will see later, this goes from individual consultation services at one end of the spectrum to total facility-based services involving teams of people at the other.

There are four categories of services which are purchased:

Role of Academic Research Services

- Available, Independent, Focused Expertise
- Peer Review
- Independent Communications Between Competing Industries or Industry and Government
- Credible Opinions

Available, independent, focused expertise encompasses opinions from and studies by university personnel who have a special expertise and know-how. The three key items are:

- Available - It may be that the most knowledgeable source of information or real capability in a special area may be within a competitors' organization or with a government group which is not available to an industrial competitor. Academia then becomes a source for expertise - expertise which is available.

- Independent - A redefinition of available; independent of ties or various binding controls such as financial or confidential agreements.

- Focused Expertise - The entire concept of academia is a collection of experts, each accumulating specific knowledge of a small area of our world by focusing his or her attention thereon. Industry can use this focus on problems summing up to the development of a relationship or the purchase of a service directed to answer rather specific questions. These services may, again, involve the individual consultant or the entire research project. These may vary from individual advice on how to approach development of a computer program to a task force assembled to make an atomic bomb -- probably the most famous academic effort of all time.

The second category, Peer Review, is just that. It makes utilization of one or more independent academicians in review of what was done to suggest the validity of an approach and the future directions of a program. We have used it often to evaluate information, point our possible inadequacies and define future steps. Again, it is dependent on the expertise of the academician, his reputed knowledge of a specific field and his freedom to act. It is one of the best techniques to review a new field or area quickly, particularly one new to the industry. Again, it is very useful to define program inadequacies. Peer Review helps in selecting future steps. It certainly helps in pointing out questions that others will ask which management should answer in advance.

In the third category, Communication Vehicles, we seek to take advantage of the objective, independent aura of academia. In one expression of this, two or more companies which may normally be competitors will support a program to resolve a common problem -- how to develop an acceptable assessment of a problem. For example, a group of pharmaceutical companies could support a program to detect and screen out contamination in a product. The companies would then contribute baseline information about the incidence of the problem and its effects -- information which would not ordinarily be shared among competitors. Here the use of the communication vehicle is also the use of available, independent, focused expertise. This sharing facilitates solution of the problem.

In another expression, one commanding more attention by this conference, the communication sought is between government and industry. Frequently, the available, independent, focused expertise is sought out by government in committees, review bodies, congresses, etc. All of these services expose the academician to government thinking processes, plans and programs. Industrial use of the same group provides us with insight into the government process and with foresight into future activities and programs. Not only that, but use of these people in the PEER REVIEW functions gives realism to definition of future programs where such programs are intended to resolve future questions.

The final use category, Credible Opinions, is one we define with some trepidation and care. That is the practice of placing assignments among academicians with the clear recognition that the results from a University or the opinion of an academician will have public credibility. The academic halo is sought in these studies. This may have been most applicable in the past decade, the 60's, when industry alone was charged with the big lie. Today it may be less effective as the public clearly becomes more and more distrustful of all institutions, industrial, governmental and academic. But it certainly is still a viable and broad use of academic service.

Industry's Return on the Investment

For each of the uses of academic services, there is a cost and a projected benefit. These are clear for the industrial purchaser. In each case, some special function of

academia - some special aura of the academician and his environment are sought. In these services we see the academician in a unique light, as a unique employee of a special form of institution. He is free of ties, independent, reputable and available. The academician is unlike employees of any other institution in our culture. He can serve several masters with impunity. From this we get our return.

Clearly we industrial purchasers understand the use of these services and feel there is adequate return whether this is:

Return on Investment

- The solution to the problem from the available independent, focused expertise
- The viable future plan developed by the peer review
- The understanding of other industries or of Government through the communication vehicle

- or -

- The acceptability of a set of data or a recommendation or an opinion because of academic credibility.

Each of these represents a viable, acceptable return.

Forms of Purchase of Research Services

Research services may be purchased from academicians and/or academia through formal and informal relationships. These are the purchase vehicles:

Purchase Vehicles

- Individual Consultation
- Focused Grant-in-Aid
- University Project/Independent Consultant
- Incorporated Academician

The Individual Consultation is well known. The academician, operating within his formal relationship with his employing institution supplies idea, concepts and information to the part-time industrial employer. He usually does this within a formal consulting contract which spells out his rights and obligations to the industrial employer. The time used is seen as the academicians' own property to use as he sees fit for his own gain much like each of us may use our own knowledge to invest our own capital for our own gain. The unique facet of this academic service is that the academician is selling the same expertise for second income as is of interest to his primary employer. This is something no industrial or governmental employee may do.

The focused Grant-in-Aid is an informal arrangement wherein a Grant-in-Aid is given but the grantor and the recipient are in agreement as to the use of funds. In the usual Grant-in-Aid, funds are to be used as the receiving department sees fit. No strings are attached and no university overheads are applied. In the informal arrangement, a specific problem is investigated without university overheads. No individual is specially compensated over his standard academic salary.

In the University Project/Independent Consultant arrangement a formal program with full overheads for personnel used is established with the grantee institution. The Project Manager is, however, not covered in the program. He is treated as an independent consultant receiving his own compensation without overhead penalties, etc. Here the University is usually contractually bound to deliver results, although let it be said, the contract with the grantee institution is not usually enforced by the grantor as it would be if there were two industrial institutions involved.

In the University Program, a formal, full contract is drawn up describing the entire program and its management, the time and fees involved, total overheads, etc. If the program is large, the academic institution may have an "independent" foundation to administer such affairs. Ostensibly, the institution contracts to deliver the services described. No extra-curricular compensation occurs. In fact, in large programs, the manager may have reductions of other academic duties so that there will be adequate program supervision. Here, in essence, the University is the seller of the broad available, independent, focused expertise under the academic halo.

Finally, we have the difficult-to-define segment which we have termed the "Incorporated Academician". This covers the supplemental activity of some academicians who individually contract to provide research services. Such services can range from literature reviews and analysis to

complex experimentation in the computer, physical or biological ~~services~~ sciences. The individual, frequently incorporated, then may use academic facilities, equipment, etc., normally under his control, e.g., as his own lab or computer or the University library, etc., in which to do the work. He handles all income, finance and management and is responsible for all outlays and performance. The institution has neither commitment nor involvement in, nor return from this effort. Yet, frequently, the results can be reported as "Dr. XYZ of ABC University reports..."

Each of these five vehicles can offer any of the four services sought by industry in dealing with academia and academicians.

The Questions Which are Raised:

At the outset we pointed out that it was not our purpose to raise questions about the academic environment. The invitation to speak was directed at having outsiders give you their views of purchased academic services. This we believe we have done. Perhaps then, we should close. But, having the forum we thought it might be of interest to raise, but not for us to answer in this presentation, some questions which reflect the purpose of this gathering.

Issues

- Economic - Is the University Compensated for Its Role in Supplemental Income?

- Economic - Have We, Through Supplemental Income Programs, Reduced the Flexibility and Freedom of the Academic Community?

  - Is There, Ultimately, Reliance by the Academician or by the Academic Institution on This Supplemental Income?

- Ethical - Are We Safeguarding the Key Role of Academicians in Teaching and Providing the Next Generation Who Will Lead Our Culture as Defined in Dr. Linnell's Charge in the Conference Brochure?

- Ethical - Are We Creating a Unique Segment of Our Society Who Sell the Same Service Twice?

In this paper we have looked at the four uses of academic services, the return to industry from these and the methods by which these are purchased. These have led us to ask some questions. We have asked these with the caveat that we cannot answer them since we, the industrial segment, are satisfied with our return from these purchases.

We thank you for inviting us to speak.

- THE ROLE OF ACADEMIC RESEARCH SERVICES - AN INDUSTRY VIEW

_ RETURN ON INVESTMENT

_ THE PURCHASE OF RESEARCH SERVICES

_ ETHICAL AND ECONOMIC ISSUES

ROLES OF ACADEMIC RESEARCH SERVICES

- AVAILABLE, INDEPENDENT, FOCUSED EXPERTISE
- PEER REVIEW
- INDEPENDENT COMMUNICATIONS BETWEEN COMPETING INDUSTRIES OR INDUSTRY AND GOVERNMENT
- CREDIBLE OPINIONS

AVAILABLE, INDEPENDENT, FOCUSED EXPERTISE

PEER REVIEW

COMMUNICATION VEHICLES

CREDIBLE OPINIONS

RETURN ON INVESTMENT

RETURN ON INVESTMENT

- THE SOLUTION TO THE PROBLEM FROM THE AVAILABLE INDEPENDENT, FOCUSED EXPERTISE

- THE VIABLE FUTURE PLAN DEVELOPED BY THE PEER REVIEW

- THE UNDERSTANDING OF OTHER INDUSTRIES OR OF GOVERNMENT THROUGH THE COMMUNICATION VEHICLE

- OR -

- THE ACCEPTABILITY OF A SET OF DATA OR A RECOMMENDATION OR AN OPINION BECAUSE OF ACADEMIC CREDIBILITY

PURCHASE VEHICLES

- INDIVIDUAL CONSULTATION
- FOCUSED GRANT-IN-AID
- UNIVERSITY PROJECT/INDEPENDENT CONSULTANT
- UNIVERSITY PROGRAM
- INCORPORATED ACADEMICIAN

INDIVIDUAL CONSULTATION

FOCUSED GRANT-IN-AID

UNIVERSITY PROJECT/INDEPENDENT CONSULTANT

UNIVERSITY PROGRAM

INCORPORATED ACADEMICIAN

ISSUES

- ECONOMIC - IS THE UNIVERSITY COMPENSATED FOR ITS ROLE IN SUPPLEMENTAL INCOME?

- ECONOMIC - HAVE WE, THROUGH SUPPLEMENTAL INCOME PROGRAMS, REDUCED THE FLEXIBILITY AND FREEDOM OF THE ACADEMIC COMMUNITY?

  - IS THERE, ULTIMATELY, RELIANCE ON THIS SUPPLEMENTAL INCOME?

- ETHICAL - ARE WE SAFEGUARDING THE KEY ROLE OF ACADEMICIANS IN TEACHING AND PROVIDING THE NEXT GENERATION WHO WILL LEAD OUR CULTURE AS DEFINED IN DR. LINNELL'S CHARGE IN THE CONFERENCE BROCHURE?

- ETHICAL - ARE WE CREATING A UNIQUE SEGMENT OF OUR SOCIETY WHO SELL THE SAME SERVICE TWICE?